



# Development of Agricultural Equipment Allocation Factors for EPA's MOVES Model

Andy Bollman  
North Carolina Division of Air Quality  
July 30, 2019



# *Geographic Allocation Factors for Agricultural Equipment*

- Purpose
  - Review of MOVES Nonroad Equipment Spatial Allocation Factors for 2016 Modeling Platform
  - Agricultural and Construction Equipment
- Background
  - NONROAD Model Developed from National Equipment Populations
  - Surrogate Data Used to Allocate Equipment Populations to States/Counties
- Motor Vehicle Emission Simulator (MOVES) Incorporates Nonroad Model Functionality
  - Geographic Allocation Factors for Agricultural Equipment
    - Total Acres of Crops Harvested
    - 2002 County-Level Bureau of Census
- Identify/Analyze Potential Alternatives
  - County-Level
  - Recentness
  - Better Indicator of Agricultural Equipment Population and Use?



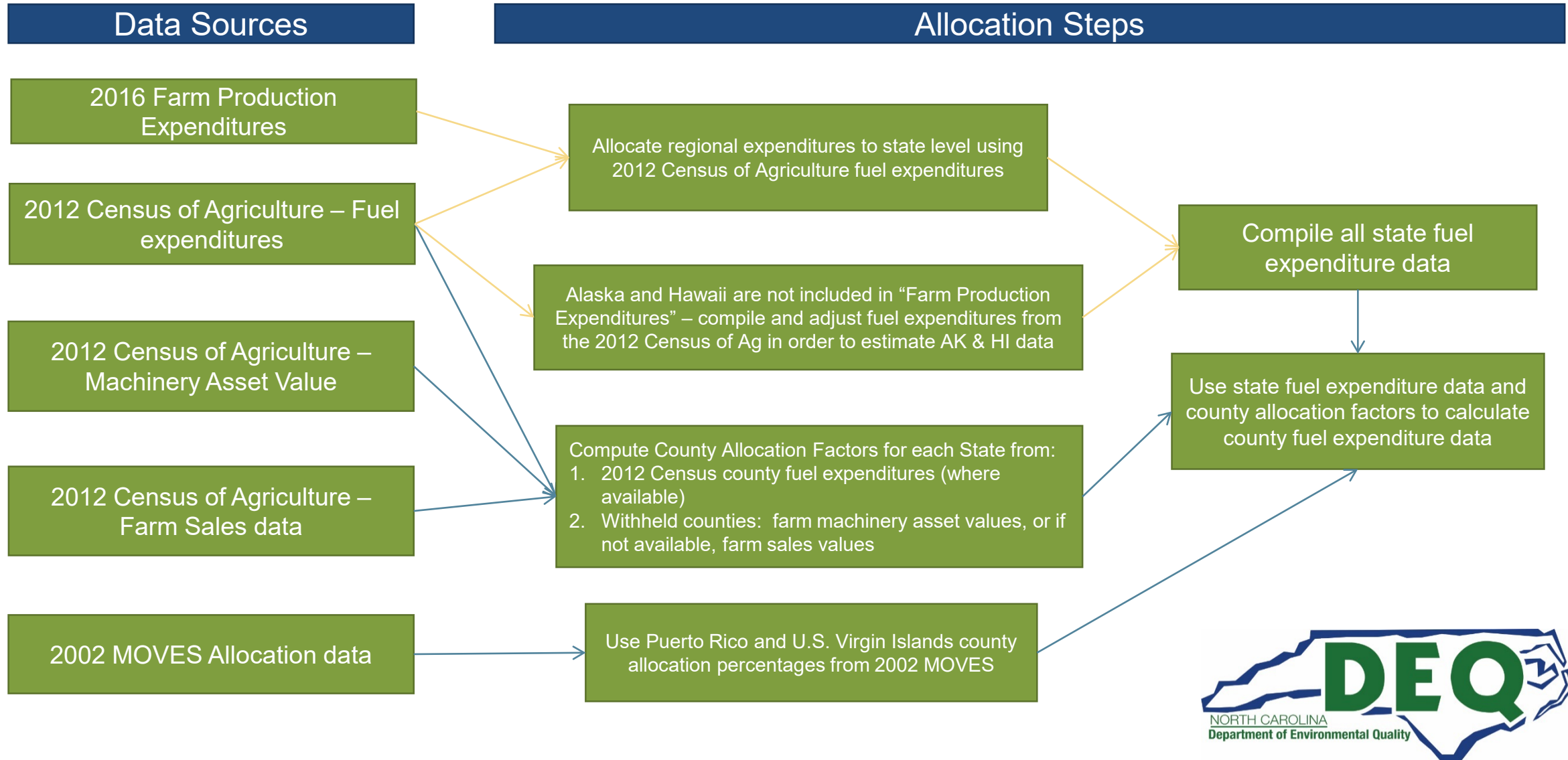
# Agriculture Sector Fuel Expenditures Data

- Farm Production Fuel Expenditure Data Available from USDA for Target Year (2016)

Region	State	2016 Farm Production Expenditures: Fuel (million \$)
Atlantic	North Carolina	290
	Other States	1,100
South	Arkansas	400
	Florida	230
	Georgia	250
	Other States	600
Midwest	Illinois	480
	Indiana	300
	Iowa	660
	Minnesota	530
	Missouri	340
	Wisconsin	330
	Other States	580
Plains	Kansas	450
	Nebraska	550
	Texas	790
	Other States	980
West	California	1,120
	Washington	230
	Other States	1,090
United States		11,300



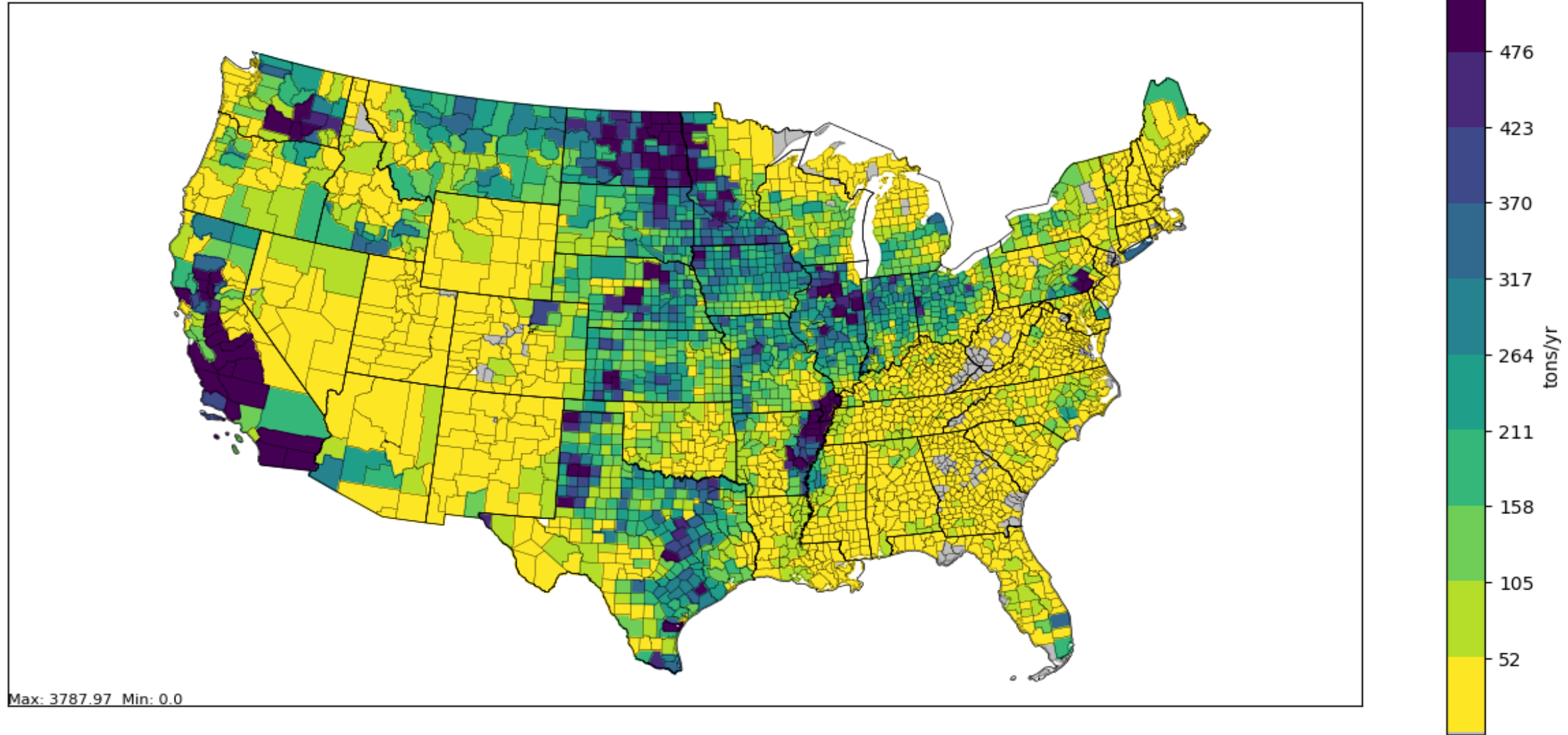
# Agriculture Sector Fuel Expenditures Data





# 2016 Platform Agricultural Sector NOx Emissions

Nonroad agriculture 2016v1 including state CA/TX NOX



# *Acknowledgements*

## EPA

Sarah Roberts, EPA Office of Transportation and Air Quality

## NC DAQ

Andy Bollman

- 919-707-8499
- [andrew.bollman@ncdenr.gov](mailto:andrew.bollman@ncdenr.gov)

Kusondra King (NC Department of Transportation)

